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**EP-A- 0 284 765**  
**US-A- 4 268 498**

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## Description

### FIELD OF INVENTION

5 The invention relates to transparent cosmetic compositions, and particularly to transparent stick compositions. The invention is also concerned with a process for making these compositions.

### BACKGROUND AND PRIOR ART

10 Conventionally, transparent cosmetic compositions have been made using a soap/alcohol formulation. Such compositions have been formed as gelled sticks which act as vehicles for delivery of active ingredients.

US 4 268 498 (Revlon) describes clear cosmetic sticks comprising a soap/alcohol gel base. It mentions two problems associated with previous soap/alcohol formulations: that the sticks are initially clear but become hazy with time, and that evaporation of the alcohol causes shrinkage of the stick. It proposes the use of polyoxyethylene-glucose fatty acid esters and of ethers of long-chain alcohols to replace short-chain monohydric alcohols. However, desirable cosmetic features such as cooling effect are thereby lost.

In EP 107 330 (Procter & Gamble), there is disclosed a transparent soap gel stick composition which contains hydro-alcoholic soluble emollient. The composition contains less than 12.5% of a short chain monohydric alcohol, e.g. ethanol. However, there is not mention of the inclusion of a clarity-inducing component.

EP-A-0284765 (American Cyanamid) discloses clear cosmetic stick products which rely for their clarity and stability on dipropylene glycol as a solvent for the soap component.

Transparent sticks can be prepared and manufactured by ensuring complete neutralisation of the fatty acids, but this requires an increase in the pH of the composition to unacceptably high levels, approximately pH 10.

Further neutralisation to pH 7 means that free fatty acid will be present which may form acid soap crystals providing nucleation sites leading to the growth of large soap crystals. This growth of large crystals destroys the transparency of the composition either immediately or on gradual cooling.

30 It has surprisingly been found that when certain compounds are included in the cosmetic composition, the growth of soap crystals in the composition is inhibited, and transparency is achieved even at high levels of monohydric alcohol. Furthermore, such compositions can, if desired, be formulated entirely from natural plant-derived materials, that is, materials obtained from microbial culture and/or from higher plants.

### 35 DEFINITION OF THE INVENTION

The invention provides a

transparent cosmetic stick composition having a lamellar structure, comprising:

- (a) from 5 to 95% by weight of an alcohol;
- 40 (b) from 3 to 20% by weight of a soap; and
- (c) from 0 to 30% by weight of water; characterised by further comprising:
- (d) from 0.1 to 10% by weight of a soap crystal growth inhibitor selected from:
  - (i) monoglycerides, diglycerides, triglycerides of C<sub>6</sub>-C<sub>24</sub> saturated or unsaturated, straight- or branched-chain fatty acids or substituted fatty acids;
  - 45 (ii) salts of substituted saturated or unsaturated, straight- or branched-chain fatty acids;
  - (iii) salts of branched-chain saturated or unsaturated fatty acids;
  - (iv) C<sub>3</sub>-C<sub>20</sub> peptides;
  - (v) substituted or unsubstituted nonionic surfactants having a carbon chain length of less than C<sub>24</sub> and derived from: alcohols; ethylene, propylene or butylene oxide; sorbitan esters; rosins; lanolin;
  - 50 or mixtures thereof.

### DISCLOSURE OF THE INVENTION

#### (A) The Alcohol

55 The composition according to the invention comprises an alcohol component which may be monohydric or polyhydric or combinations thereof. The alcohol component may comprise ethanol, isopropanol, preferably propylene glycol or butanediol, most preferably glycerol. The alcohol component is present in an

amount from 5 to 95% by weight.

(B) The soap

- 5 The composition according to the invention comprises a soap. Preferably the soap is a straight chain saturated unsubstituted soap with chain length at least  $C_{16}$ , for example a palmitate or a stearate, and especially it may comprise a mixture of palmitate and stearate, preferably with the ratio between palmitate and stearate being between 60:40 and 40:60. The soap is present in an amount from 3 to 20% by weight, and preferably in an amount from 5 to 10% by weight. The soap may be neutralised with alkali metal,  
10 alkaline earth, Group III metal ions (e.g.  $Al^{3+}$ ), alkanol ammonium or any other suitable cation. The soap chains form into layers, providing the stick with its lamellar structure.

(C) The soap crystal growth inhibitor

- 15 The composition according to the invention is characterised by comprising a soap crystal growth inhibitor as defined above, though it may be appreciated that any soap crystal growth inhibitor which renders transparent the composition of the invention will be suitable for use in such a composition. The soap crystal growth inhibitor is present in an amount from 0.1 to 10%, and preferably in an amount from 0.1 to 4% by weight of the composition. The growth inhibitor will be a molecule which is likely to be  
20 incorporated into the soap crystal lattice but will not be so compatible as to form an unmodified mixed crystal.

In accordance with the invention, the crystal growth inhibitor is selected from the following:

- (a) monoglycerides, diglycerides, triglycerides of  $C_6$ - $C_{24}$  saturated or unsaturated, straight- or branched-chain fatty acids or substituted fatty acids;
- 25 (b) salts of substituted fatty acids, wherein the fatty acid may be saturated or unsaturated, straight or branched-chain, and wherein the salt may be formed by any suitable cation. The substituents may include hydroxy, thiol, substituted thiol, mono- and di-substituted amines, ethers, ketones, and the like.
- (c) salts of branched-chain fatty acids (saturated or unsaturated) formed with any suitable cation;
- (d) short-chain ( $C_3$ - $C_{20}$ ) peptides;
- 30 (e) substituted or unsubstituted short-chain nonionic surfactants ( $<C_{24}$ ) derived from: alcohols; ethylene, propylene or butylene oxide; sorbitan esters; rosins; lanolin. Other similar compounds may also be suitable.

The above exemplified inhibitors may be used singly or in mixtures. Preferred crystal growth inhibitors include glyceryl monolaurate, sodium ricinoleate (a  $C_{18}$  branched chain fatty acid) and sodium  
35 isostearate.

(D) Water

The composition according to the invention comprises from 0 to 30% by weight of water.

40

(E) Other ingredients

- In addition to the essential ingredients defined herein, there may also be included in the cosmetic composition of the invention other ingredients, provided they do not destroy the transparency of the  
45 composition. Examples of additives are emollients, perfumes, dyes, anti-microbial agents, deodorants, deoperfumes, sunscreens and skin modifiers, as well as other additives known in this field.

ADVANTAGES OF THE INVENTION

- 50 The transparent cosmetic composition of the invention may be formed as a solid transparent stick. In all cases, the addition of a soap crystal growth inhibitor to the soap/alcohol mixture allows transparency to be attained even at levels of monohydric alcohol of up to 95% by weight. A composition containing high levels of such alcohols confers a pleasant cooling effect on the skin and is non-sticky. By selection of suitable packaging, it is possible to avoid the problem of shrinkage due to evaporation of alcohol. The composition  
55 of the invention retains its transparency on storage.

## PROCESS

The invention also provides a process for preparing a transparent cosmetic composition as herein defined. The process comprises combining the ingredients in liquid form. To manufacture a transparent stick, the combined ingredients are poured into a container having a particular shape so that the solid which

If sticks containing very low levels of water are to be made, sodium hydroxide may be added to the alcohol and the solution heated with constant stirring to reflux. When completely dissolved all the remaining ingredients except the perfume, anti-bacterial agent and the like minor ingredients may be added, the solution stirred and once more heated to reflux. Finally, the solution is cooled to about 60°C, minor ingredients such as perfume added to the homogenous solution and the sticks cast into appropriate barrels.

## PRODUCT FORMS AND PACKAGING

A preferred embodiment of the invention is in the form of a stick of circular or oval cross-section contained in a stick dispenser. Suitable dispensers have an airtight cap so as to prevent evaporation of volatile ingredients during storage between uses. The composition of the invention can also be dispensed as a cream or soft get from an applicator suitable for the purpose.

## USE OF THE INVENTION

The transparent cosmetic composition of the invention is applied to areas of the skin as desired. In the case of a transparent stick, the stick is rubbed on the skin so as to leave a deposit of the cosmetic composition. By this means, additives which are included in the cosmetic composition may be spread onto the skin in the quantities required.

## EXAMPLES

A number of compositions were prepared according to the procedure described herein (all % by weight formulations).

Transparency was evaluated in two ways:

(a) the test given in US 3 274 119 wherein "transparent" is defined as such that a bold face type of 14 point size can be readily read through a 1/4 inch section of material;

(b) thin slices (approximately 5 mm) of the sticks were taken and viewed through a cross-polarising lens.

This shows crystal facets. The less the number of facets, the more transparent the products. The "blacker" the cross-polarised image, the more transparent it is. Structures according to the present invention are noted to have 'maltese cross' images.

Formulations according to the invention which contained the soap crystal growth inhibitor were found to be more "transparent" than similar formulations which did not include the soap crystal growth inhibitor.

**INGREDIENTS**

Example	Isopropanol	IMS (Alcohol)	C <sub>16</sub> C <sub>18</sub> Fatty Acid	NaOH	Sodium salt of		Perfume	Propylene Glycol	
					Glyceryl Monolaurate	Ricinoleic Acid		Water	Glycol
1	-	65.0	25.6	6.4	1.0	1.0	1.0	-	-
2	-	25.0	58.1	6.4	1.0	-	1.0	7.5	-
3	-	35.0	50.6	6.4	1.0	-	1.0	5.0	-
4	-	63.0	25.6	6.4	1.0	-	1.0	2.0	-
5	-	46.0	43.9	7.0	1.1	-	1.0	-	-
6	-	25.5	-	6.0	0.9	1.0	1.0	5.6	60.0
7	-	20.0	-	7.0	1.0	1.0	1.0	-	70.0
8	-	25.0	15.0	7.0	1.0	1.0	1.0	4.5	45.5
9	35.0	30.0	25.6	6.4	1.0	-	1.0	-	-
10	33.0	30.0	25.6	6.4	1.0	-	1.0	2.0	-

(All figures are weight proportions of the total composition)

**Claims**

1. A transparent cosmetic stick composition having a lamellar structure, comprising:
  - (a) from 5 to 95% by weight of an alcohol;

- (b) from 3 to 20% by weight of a soap; and  
(c) from 0 to 30% by weight of water;  
characterised by further comprising:  
(d) from 0.1 to 10% by weight of a soap crystal growth inhibitor selected from:
- 5 (i) monoglycerides, diglycerides, triglycerides of C<sub>6</sub>-C<sub>24</sub> saturated or unsaturated, straight- or branched-chain fatty acids or substituted fatty acids;
  - (ii) salts of substituted saturated or unsaturated, straight- or branched-chain fatty acids;
  - (iii) salts of branched-chain saturated or unsaturated fatty acids;
  - (iv) C<sub>3</sub>-C<sub>20</sub> peptides;
  - 10 (v) substituted or unsubstituted nonionic surfactants having a carbon chain length of less than C<sub>24</sub> and derived from: alcohols; ethylene, propylene or butylene oxide; sorbitan esters; rosins; lanolin; or mixtures thereof.
2. A cosmetic composition as claimed in claim 1, wherein the alcohol component (a) is monohydric and comprises ethanol, isopropanol or mixtures thereof.
  - 15 3. A cosmetic composition as claimed in claim 1, wherein the alcohol component (a) is polyhydric and comprises glycerol, propylene glycol, butanediol or mixtures thereof.
  4. A cosmetic composition as claimed in any one of claims 1 to 3, wherein the soap component (b) comprises a palmitate.
  - 20 5. A cosmetic composition as claimed in any one of the preceding claims, wherein the soap component (b) comprises a stearate.
  - 25 6. A cosmetic composition as claimed in any one of the preceding claims, wherein the soap component (b) comprises a mixture of a palmitate and a stearate.
  7. A cosmetic composition as claimed in claim 6, wherein the ratio of stearate to palmitate is in the range 40:60 to 60:40.
  - 30 8. A cosmetic composition as claimed in any of the preceding claims, wherein the soap component (b) is present in an amount of from 5 to 10% by weight.
  9. A cosmetic composition as claimed in any one of the preceding claims, wherein the soap crystal growth inhibitor component (d) is glyceryl monolaurate.
  - 35 10. A cosmetic composition as claimed in any one of claims 1 to 8, wherein the soap crystal growth inhibitor component (d) is sodium ricinoleate.
  - 40 11. A cosmetic composition as claimed in any one of claims 1 to 8, wherein the soap crystal growth inhibitor component (d) is sodium isostearate.
  12. A cosmetic compositions as claimed in any one of the preceding claims, wherein the soap crystal growth inhibitor component (d) is present in an amount from 0.1 to 4% by weight of the composition.
  - 45 13. A cosmetic composition as claimed in any one of the preceding claims, wherein the ingredients are natural plant-derived materials.
  14. A process for preparing a transparent cosmetic stick composition as claimed in any one of the preceding claims, comprising combining the ingredients in liquid form and pouring them into a container having a particular shape so that the solid which forms takes the shape of the container.
  - 50 15. Use in a transparent cosmetic stick composition having a lamellar structure and comprising:
    - 55 (a) from 5 to 95% by weight of an alcohol;
    - (b) from 3 to 20% by weight of a soap; and
    - (c) from 0 to 30% by weight of water;
as a soap crystal growth inhibitor of

(d) from 0.1 to 10% by weight of a material selected from:

- (i) monoglycerides, diglycerides, triglycerides of  $C_6$ - $C_{24}$  saturated or unsaturated, straight- or branched-chain fatty acids or substituted fatty acids;
- (ii) salts of substituted saturated or unsaturated, straight- or branched-chain fatty acids;
- (iii) salts of branched-chain saturated or unsaturated fatty acids;
- (iv)  $C_3$ - $C_{20}$  peptides;
- (v) substituted or unsubstituted nonionic surfactants having a carbon chain length of less than  $C_{24}$  and derived from: alcohols; ethylene; propylene or butylene oxide; sorbitan esters; rosins; lanolin; or mixtures thereof.

## Patentansprüche

1. Durchsichtige, kosmetische Stiftzubereitung mit einer Lamellenstruktur, welche umfasst;

- (a) 5 bis 95 Gew.% eines Alkohols,
- (b) 3 bis 20 Gew.% einer Seife und
- (c) 0 bis 30 Gew.% Wasser,

dadurch gekennzeichnet, dass sie zusätzlich

(d) 0,1 bis 10 Gew.% eines Inhibitors zur Kristallwachstumshemmung in der Seife, ausgewählt unter

- (i) Monoglyceriden, Diglyceriden, Triglyceriden von gesättigten oder ungesättigten gerad- oder verzweigt-kettigen  $C_6$ - $C_{24}$ -Fettsäuren oder substituierten  $C_6$ - $C_{24}$ -Fettsäuren,
- (ii) Salzen von substituierten, gesättigten oder ungesättigten geradkettigen oder verzweigt-kettigen Fettsäuren,
- (iii) Salzen von verzweigt-kettigen, gesättigten oder ungesättigten Fettsäuren,
- (iv)  $C_3$ - $C_{20}$ -Peptiden und
- (v) substituierten oder unsubstituierten nichtionischen oberflächenaktiven Mitteln mit einer Kohlenstoffkettenlänge von weniger als  $C_{24}$  und abgeleitet von Alkoholen, Ethylen-, Propylen- oder Butylenoxid; Sorbitanestern, Kolophonium, Lanolin oder Gemische davon

2. Kosmetische Zubereitung gemäß Anspruch 1, dadurch gekennzeichnet, dass die Alkoholkomponente (a) ein einwertiger Alkohol ist und Ethanol, Isopropanol oder deren Mischungen umfasst.

3. Kosmetische Zubereitung gemäß Anspruch 1, dadurch gekennzeichnet, dass die Alkoholkomponente (a) ein mehrwertiger Alkohol ist und Glycerin, Propylenglykol, Butandiol oder deren Mischungen umfasst.

4. Kosmetische Zubereitung gemäß einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, dass die Seifenkomponente (b) ein Palmitat umfasst.

5. Kosmetische Zubereitung gemäß einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die Seifenkomponente (b) ein Stearat umfasst.

6. Kosmetische Zubereitung gemäß einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass die Seifenkomponente (b) eine Mischung aus einem Palmitat und einem Stearat umfasst.

7. Kosmetische Zubereitung gemäß Anspruch 6, dadurch gekennzeichnet, dass das Verhältnis des Stearats zu dem Palmitat im Bereich von 40:60 bis 60:40 liegt.

8. Kosmetische Zubereitung gemäß einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass die Seifenkomponente (b) in einer Menge von 5 bis 10 Gew.% vorhanden ist.

9. Kosmetische Zubereitung gemäß einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der Inhibitor zur Hemmung des Kristallwachstums der Seife (d) Glycerylmonolaurat ist.

10. Kosmetische Zubereitung gemäß einem der Ansprüche 1 bis 8, dadurch gekennzeichnet, dass der Inhibitor zur Hemmung des Kristallwachstums der Seife (d) Natriumricinoleat ist.

11. Kosmetische Zubereitung gemäss einem der Ansprüche 1 bis 8, dadurch gekennzeichnet, dass der Inhibitor zur Hemmung des Kristallwachstums der Seife (d) Natriumisostearat ist.
12. Kosmetische Zubereitung gemäss einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der Inhibitor zur Hemmung des Kristallwachstums der Seife (d) in einer Menge von 0,1 bis 4 Gew.%, bezogen auf die Zubereitung, vorhanden ist.
13. Kosmetische Zubereitung gemäss einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass die Ingredienzien pflanzliche Naturstoffe sind.
14. Verfahren zur Herstellung der durchsichtigen kosmetischen Stiftzubereitung gemäss einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass man die Ingredienzien in flüssiger Form kombiniert und diese in einen Behälter mit einer speziellen Form einführt, so dass der sich bildende Festkörper die Formgestalt des Behälters erhält.
15. Verwendung einer durchsichtigen kosmetischen Stiftzubereitung mit einer Lamellenstruktur, welche umfasst:
  - (a) 5 bis 95 Gew.% eines Alkohols,
  - (b) 3 bis 20 Gew.% einer Seife,
  - (c) 0 bis 30 Gew.% Wasser und
  - als Inhibitor zur Hemmung des Kristallwachstums der Seife
  - (d) 0,1 bis 10 Gew.% eines Stoffes ausgewählt unter
    - (i) Monoglyceriden, Diglyceriden, Triglyceriden von gesättigten oder ungesättigten gerad- oder verzweigt-kettigen C<sub>6</sub>-C<sub>24</sub>-Fettsäuren oder substituierten C<sub>6</sub>-C<sub>24</sub>-Fettsäuren,
    - (ii) Salzen von substituierten, gesättigten oder ungesättigten geradkettigen oder verzweigt-kettigen Fettsäuren,
    - (iii) Salzen von verzweigt-kettigen, gesättigten oder ungesättigten Fettsäuren,
    - (iv) C<sub>3</sub>-C<sub>20</sub>-Peptiden und
    - (v) substituierten oder unsubstituierten, nichtionischen oberflächenaktiven Mitteln mit einer Kohlenstoffkettenlänge von weniger als C<sub>24</sub> und abgeleitet von Alkoholen, Ethylen-, Propylen- oder Butylenoxid; Sorbitanestern, Kolophonium, Lanolin oder Gemische davon.

## Revendications

1. Composition cosmétique transparente pour bâtonnets ayant une structure lamellaire, cette composition comportant :
  - (a) de 5 à 95% en poids d'un alcool;
  - (b) de 3 à 20% en poids d'un savon; et
  - (c) de 0 à 30% en poids d'eau;la composition étant caractérisée en ce qu'elle comporte en outre :
  - (d) de 0,1 à 10% en poids d'un inhibiteur de croissance de cristaux de savon choisi parmi :
    - (i) les monoglycérides, diglycérides, triglycérides d'acides gras en C<sub>6</sub>-C<sub>24</sub> saturés ou insaturés à chaîne droite ou ramifiée, ou d'acides gras substitués;
    - (ii) les sels d'acides gras substitués, saturés ou insaturés à chaîne droite ou ramifiée ;
    - (iii) les sels d'acides gras saturés ou insaturés, à chaîne ramifiée ;
    - (iv) les peptides en C<sub>3</sub>-C<sub>20</sub>;
    - (v) les agents tensio actifs non ioniques substitués ou non substitués ayant une longueur de chaîne carbonée inférieure à C<sub>24</sub> et dérivés : des alcools; de l'oxyde d'éthylène, de propylène ou de butylène; des esters de sorbitane; des colophanes; de la lanoline; ou leurs mélanges.
2. Composition cosmétique telle que revendiquée dans la revendication 1, où le composant alcool (a) est monohydrique et comporte l'éthanol, l'isopropanol ou leurs mélanges.
3. Composition cosmétique telle que revendiquée dans la revendication 1, où le composant alcool (a) est polyhydrique et comporte le glycérol, le propylène glycol, le butanediol ou leurs mélanges.



4. Composition cosmétique telle que revendiquée dans l'une quelconque des revendications 1 à 3, où le composant savon (b) comporte un palmitate.
- 5 5. Composition cosmétique telle que revendiquée dans l' une quelconque des revendications précédentes, où le composant savon (b) comporte un stéarate.
6. Composition cosmétique telle que revendiquée dans l' une quelconque des revendications précédentes, où le composant savon (b) comporte un mélange d'un palmitate et d'un stéarate.
- 10 7. Composition cosmétique telle que revendiquée dans la revendication 6, où le rapport entre le stéarate et le palmitate est dans le domaine de 40:60 à 60:40.
8. Composition cosmétique telle que revendiquée dans l'une quelconque des revendications précédentes, où le composant savon (b) est présent dans une quantité de 5 à 10% en poids.
- 15 9. Composition cosmétique telle que revendiquée dans l' une quelconque des revendications précédentes, où le composant (d) inhibiteur de croissance de cristaux de savon est le monolaurate de glycéryle.
- 20 10. Composition cosmétique telle que revendiquée dans l' une quelconque des revendications 1 à 8, où le composant (d) inhibiteur de croissance de cristaux de savon est le ricinoléate de sodium.
11. Composition cosmétique telle que revendiquée dans l' une quelconque des revendications 1 à 8, où le composant (d) inhibiteur de croissance de cristaux de savon est l'isostéarate de sodium.
- 25 12. Composition cosmétique telle que revendiquée dans l' une quelconque des revendications précédentes, où le composant (d) inhibiteur de croissance de cristaux de savon est présent dans une quantité de 0,1 à 4% en poids de la composition.
- 30 13. Composition cosmétique telle que revendiquée dans l' une quelconque des revendications précédentes, où les ingrédients sont des matières naturelles dérivées de plantes.
14. Procédé pour préparer une composition cosmétique transparente pour bâtonnets, telle que revendiquée dans l' une quelconque des revendications précédentes, comportant le fait de combiner les ingrédients sous forme liquide et de les verser dans un récipient ayant une forme particulière de telle sorte que le solide qui se forme prend la forme du récipient.
- 35 15. Utilisation dans une composition cosmétique transparente pour bâtonnets, ayant une structure lamellaire et comportant :
  - (a) de 5 à 95% en poids d'un alcool;
  - 40 (b) de 3 à 20% en poids d'un savon; et
  - (c) de 0 à 30% en poids d'eau; comme inhibiteur de croissance de cristaux de savon, de
  - (d) 0,1 à 10% en poids d'une matière choisie parmi :
    - (i) les monoglycérides, diglycérides, triglycérides d'acides gras en C<sub>6</sub>-C<sub>24</sub>, saturés ou insaturés, à chaîne droite ou ramifiée ou d'acides gras substitués .
    - 45 (ii) les sels d'acides gras substitués, saturés ou insaturés, à chaîne droite ou ramifiée ;
    - (iii) les sels d'acides gras à chaîne ramifiée , saturés ou insaturés;
    - (iv) les peptides en C<sub>3</sub>-C<sub>20</sub>;
    - (v) les agents tensio-actifs non ioniques, substitués ou non substitués, ayant une longueur de chaîne carbonée inférieure à C<sub>24</sub> et dérivés : des alcools; de l'oxyde d'éthylène, de propylène ou
    - 50 de butylène; des esters de sorbitanne; des colophanes; de la lanoline; ou de leurs mélanges.